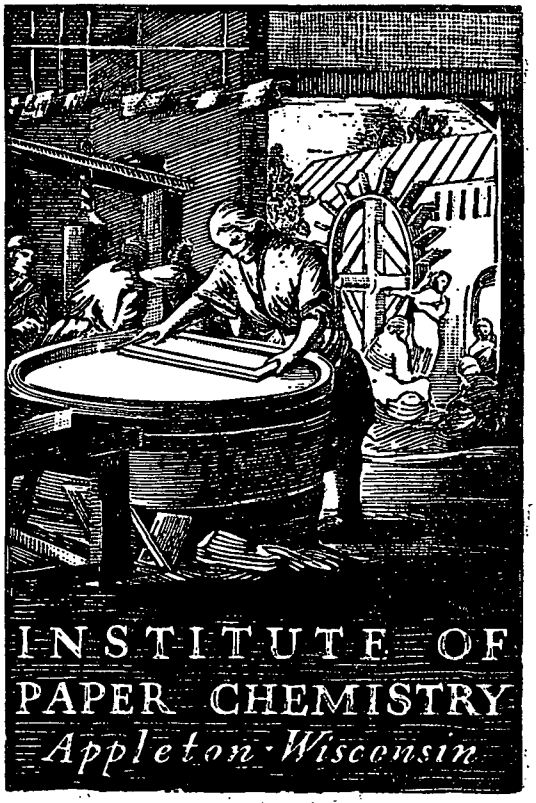

CONTINUOUS BASELINE STUDY

Project 1108-13

Report 170

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

June 1, 1961

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

Report 170

A Progress Report

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FOURDRINIER KRAFT BOARD INSTITUTE, INC.

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THE INSTITUTE OF PAPER CHEMISTRY

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SUMMARY

The objective of the continuous baseline study on linerboard is twofold. The first objective is to provide an indication of the quality of the 42-lb. fourdrinier kraft linerboard being produced by each of the participating mills and by the industry as a whole. The second objective is to provide a procedure whereby the mills have the opportunity to compare their test results with those obtained at the Institute on similar materials, thus providing a convenient system of instrument verification.

During the month of May, one hundred and thirteen sample lots of 42-lb. fourdrinier kraft linerboard representing the production of seventeen mills were evaluated at The Institute of Paper Chemistry. Each sample lot was evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. Shown below are the maximum and minimum current mill average for each test; the current mill average is the average of the results obtained on all sample lots of linerboard submitted from a given mill during the current period. Also shown for each test is the current F.K.I. average which is determined by averaging the current mill averages and is indicative of the test level being maintained by the industry as a whole to the degree that the industry is represented by the participating mills:

	Maximum Current Mill Av.	Minimum Current Mill Av.	Current F.K.I. Av.
Basis weight, lb.	44.0	42.0	42.9
Caliper, pt.	13.5	11.6	12.6
Bursting strength, p.s.i. gage	117	103	109
Machine direction Elmendorf tear, g./sheet	375	275	327
Cross-machine direction Elmendorf tear, g./sheet	412	330	370

As mentioned previously, the study provides a procedure whereby the mills have the opportunity to compare their test results with those obtained on corresponding sample lots of linerboard at the Institute so that a convenient system of instrument verification is readily available to all participants. A summary of the agreement obtained in the comparisons of Institute and mill test results for the current period is shown below. The tabulated data show the number of mills, and the percentage of all mills which this number represents, whose average test results for the month of May fall within the designated percentages from the average test results obtained at the Institute on corresponding materials. It may be noted from this summary that agreement between the results obtained at the Institute and those obtained at the mills was generally very good.

	Average Percentage Difference Between Institute and Mill Test Results								
	±0.5	±1	±2	±3	±4	±5	±7.5	±10	±14
Basis weight									
Number of mills	9	17							
Percentage of all mills	52.9	100.0							
Caliper									
Number of mills	1	4	11	13	15	17			
Percentage of all mills	5.9	23.5	64.7	76.5	88.2	100.0			
Bursting strength									
Number of mills	2	7	13	16	16	16	17		
Percentage of all mills	11.8	41.2	76.5	94.1	94.1	94.1	100.0		
Tearing strength, in									
Number of mills	0	2	6	8	10	10	13	13	16
Percentage of all mills	0.0	12.5	37.5	50.0	62.5	62.5	81.2	81.2	100.0
Tearing strength, across									
Number of mills	3	7	8	8	9	11	13	15	16
Percentage of all mills	18.8	43.8	50.0	50.0	56.2	68.8	81.2	93.8	100.0

INTRODUCTION

The objective of the continuous baseline study on linerboard is twofold. One objective is to provide an indication of the quality of the 42-lb. fourdrinier kraft linerboard being produced by each of the participating mills and by the industry as a whole. Another objective is to provide a procedure whereby the mills have the opportunity to compare their test results with those obtained at the Institute on similar materials, thus providing a convenient system of instrument verification. The first objective mentioned above is implemented by the weekly sampling of the product of each machine manufacturing 42-lb. kraft linerboard and submitting these weekly samples to The Institute of Paper Chemistry where they are evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The second objective of the continuous baseline study--namely, to provide a convenient system of instrument verification--is achieved by the testing of analogous samples by the mill and the Institute. The mill data are sent to the Institute, and a comparison of Institute and mill test results is included in the monthly reports. In addition to fulfilling the two prime objectives which have been described, the baseline study is accumulating an invaluable ever-growing reserve of background information essential for the intelligent evaluation of specifications of any kind.

The dual objectives of the continuous baseline study on linerboard have been described in the preceding paragraph. The remainder of the report presents the test results for the linerboard samples which were evaluated during the month of May. In line with the dual nature of the study, the

presentation is divided into two parts. Part I presents the results obtained at The Institute of Paper Chemistry, and Part II presents a comparison of results obtained at the Institute with those obtained at the mills. It should be noted that the same code letters are not used to identify the same participants in these reports from month to month. Each participant is privately advised of his own code. Attention is directed to the fact that the bursting strength results presented in these reports have been obtained, beginning in April, 1960, with a diaphragm of the composition and style (fillet filled in) introduced by B. F. Perkins and Son, Inc.

PART I: PRESENTATION AND DISCUSSION OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY

During the month of May, one hundred and thirteen different sample lots were evaluated at The Institute of Paper Chemistry. A tabulation of the number of samples classified according to mill may be seen in Table I.

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the current mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average represents the average of the current mill averages, whereas the cumulative F.K.I. average represents the average of the current F.K.I. averages for the previous twelve months excluding the current period. Hence, in the case of the current report, the cumulative F.K.I. average covers the period from May 1, 1960, to April 30, 1961. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 42.9 lb., and the cumulative F.K.I. average basis weight is 43.5 lb. Hence, the F.K.I. index for basis weight determined in per cent as previously described is 98.6 and indicates that the current F.K.I. average basis weight is lower than the cumulative F.K.I. average.

TABLE I

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	4
B	8
C	4
D	2
E	5
F	8
G	0
H	3
I	8
J	9
K	9
L	8
M	7
N	0
O	8
P	4
Q	12
S	8
T	6
Total	113

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--MAY 1 THROUGH MAY 31, 1961

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	43.0	12.7	108	275	335
B	43.1	13.4	103	325	362
C	42.8	12.1	113	348	371
D	44.0	11.6	110	336	376
E	42.5	12.2	105	358	396
F	42.3	13.5	109	321	351
G	No samples submitted.				
H	42.0	12.6	106	336	385
I	42.6	12.6	109	327	387
J	42.9	13.2	107	322	368
K	43.5	12.8	113	322	376
L	43.2	12.6	117	320	354
M	42.8	12.6	104	364	404
N	No samples submitted.				
O	42.5	12.4	108	321	365
P	43.5	12.6	107	375	412
Q	42.1	12.4	113	290	330
S	43.2	12.5	109	298	360
T	43.1	12.0	116	317	355
Current FKI Average:	42.9	12.6	109	327	370
Cumulative FKI Average:	43.5	12.6	111	332	374
FKI Index, %	98.6	100.0	98.2	98.5	98.9

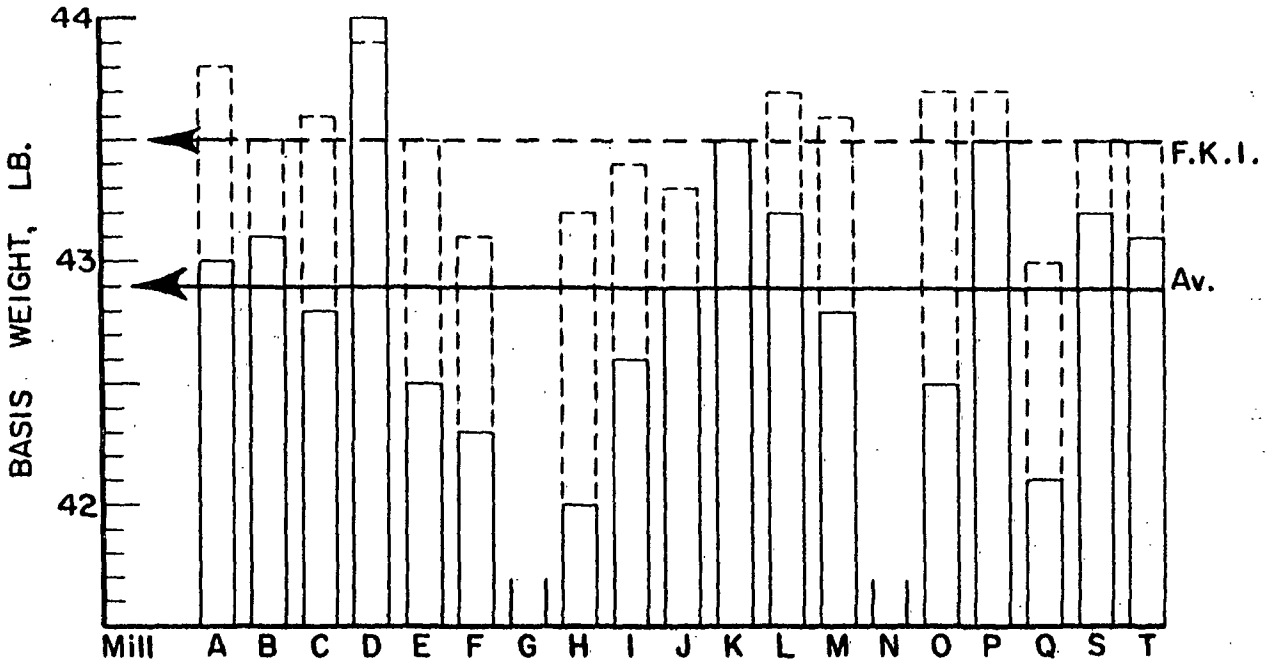

Figure 1. Comparison of Basis Weight Results for May, 1961

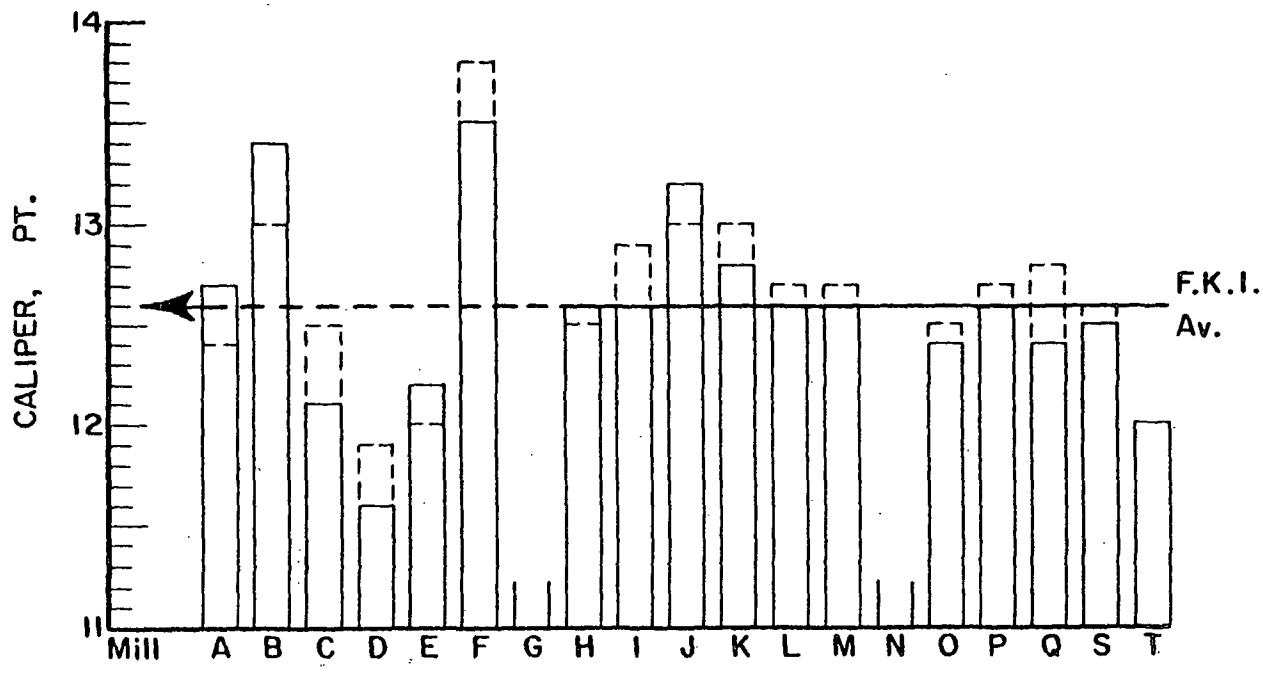

Figure 2. Comparison of Caliper Results for May, 1961

——— Current mill average

– – – – – Cumulative mill average

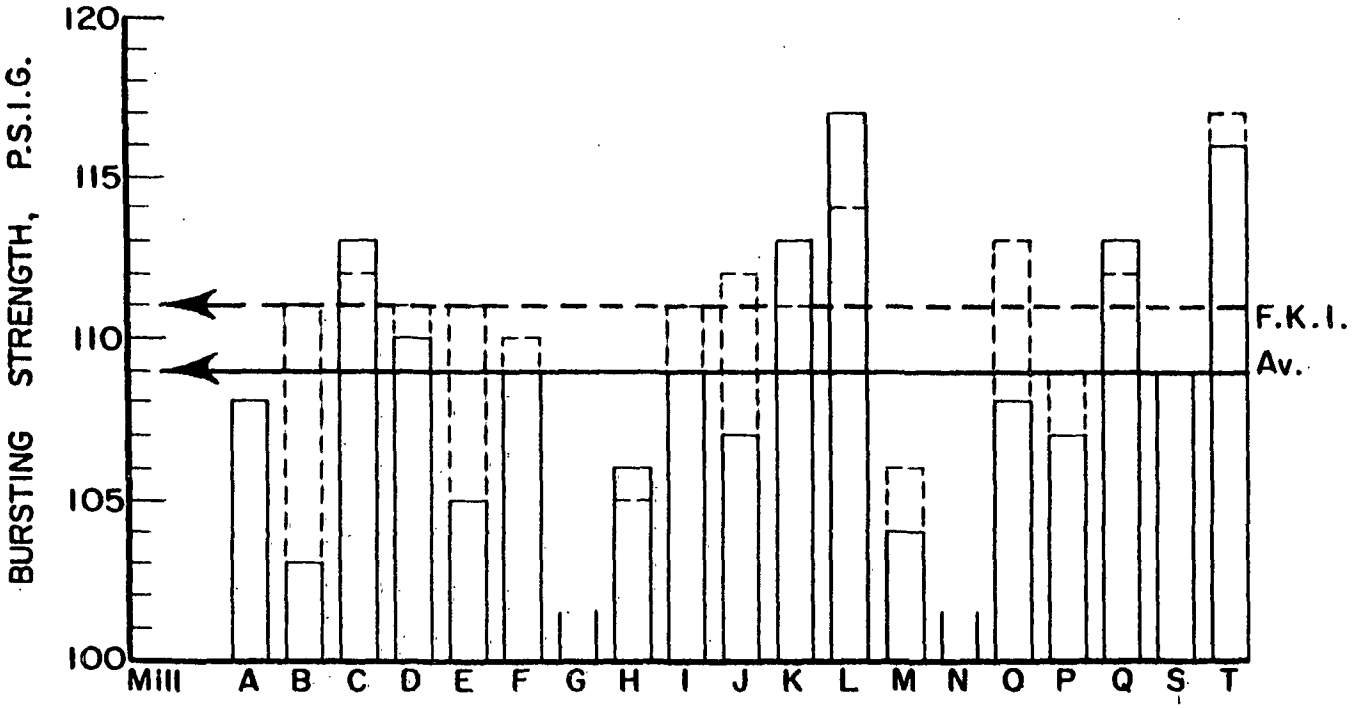

Figure 3. Comparison of Bursting Strength Results for May, 1961

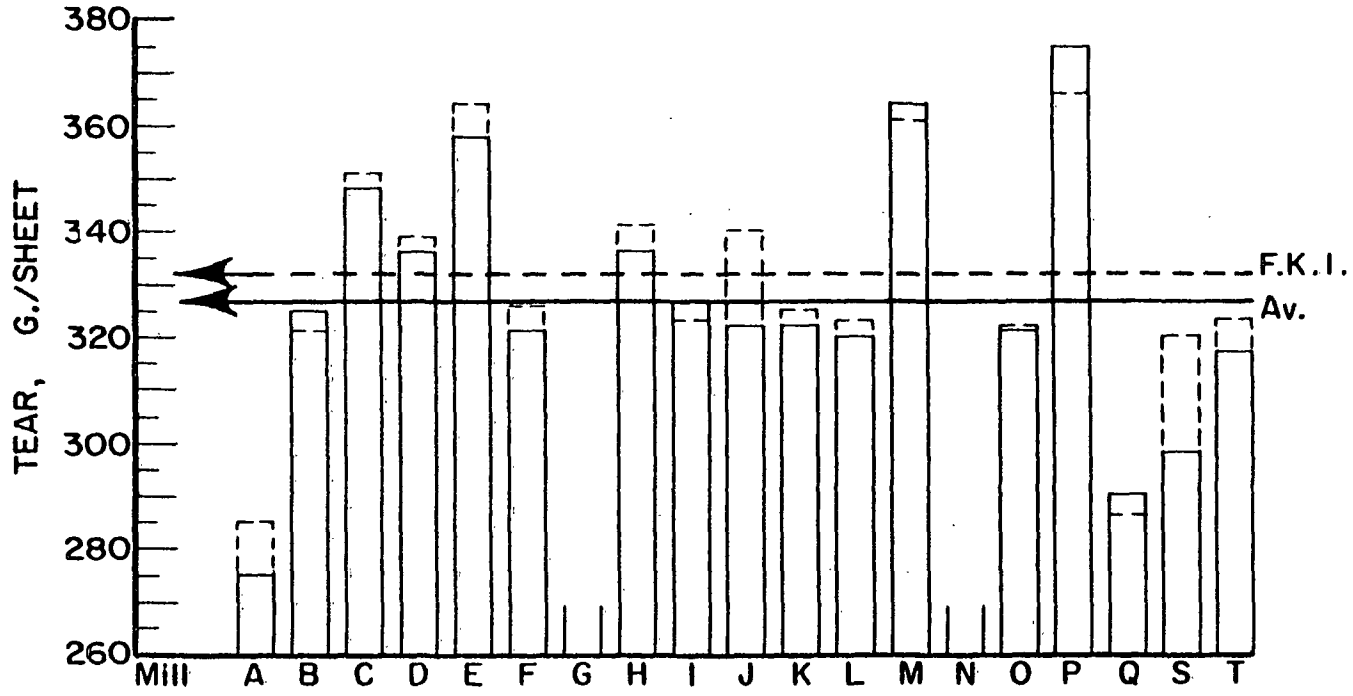

Figure 4. Comparison of Machine-Direction Tear Results for May, 1961

——— Current mill average

- - - - - Cumulative mill average

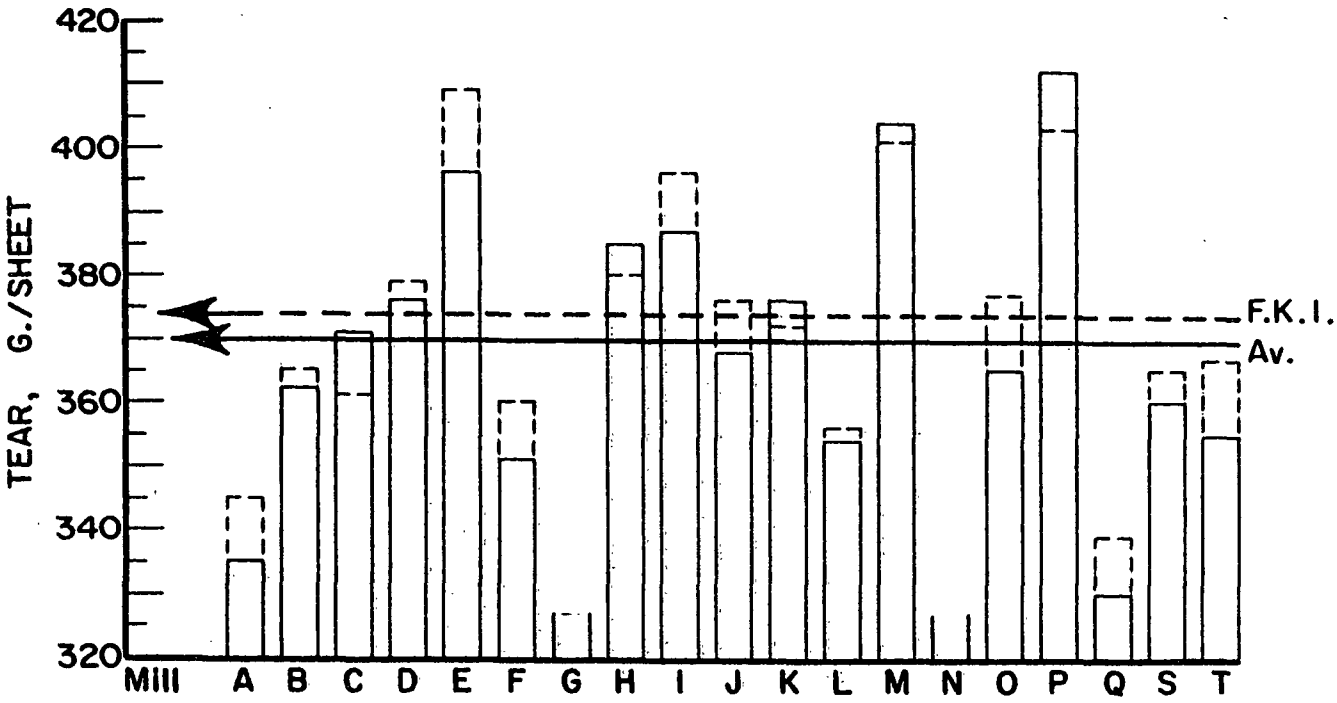

Figure 5. Comparison of Cross-Machine Direction Tear Results for May, 1961

——— Current machine average

- - - - - Cumulative machine average

A comparison of the current mill averages in Table II and Figure 1 shows that the average basis weight results for all mills conform to the 42-lb. specification set forth in Rule 41. Mill D had the highest average basis weight of 44.0 lb., which was approximately 4.8% higher than the 42-lb. specification. The lowest average basis weight of 42.0 lb. was associated with Mill H. The amount by which the mills vary from the 42-lb. specification is shown in Table II-A. A comparison of the current F.K.I. basis weight average for this period with that for the previous period shows that basis weight has remained constant at 42.9 lb.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the current mill averages varied from a low of 11.6 points for Mill D to a high of 13.5 points for Mill F. The current F.K.I. caliper average was 12.6 points, which was the same as the cumulative F.K.I. average.

The average bursting strength values given in Table II for each mill are graphically presented in Figure 3. It may be observed in Table II and Figure 3 that the current mill averages for bursting strength ranged from a low of 103 for Mill B to a high of 117 for Mill L. The current F.K.I. bursting strength average was 109 p.s.i. gage, which was slightly lower than the cumulative F.K.I. average of 111 p.s.i. gage.

The Elmendorf tear results shown in Table II for the various mills are presented graphically in Figures 4 and 5. From these presentations it may be observed that Mill P had the highest machine direction tear average of 375 g./sheet, and Mill A had the lowest average of 275 g./

TABLE II-A

PERCENTAGE DEVIATION FROM 42-LB. BASIS WEIGHT

SPECIFICATION

Mill Code	Per Cent
A	+2.4
B	+2.6
C	+1.9
D	+4.8
E	+1.2
F	+0.7
G	--
H	0.0
I	+1.4
J	+2.1
K	+3.6
L	+2.9
M	+1.9
N	--
O	+1.2
P	+3.6
Q	+0.2
S	+2.9
T	+2.6

sheet. It may be further noted that the highest cross-machine direction tear average of 412 g./sheet was associated with Mill P and that the lowest average of 330 g./sheet was associated with Mill Q. It may be observed also in Table II and Figures 4 and 5 that the current F.K.I. averages for machine direction Elmendorf tear and cross-machine direction Elmendorf tear were slightly lower than their respective cumulative F.K.I. averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. average for caliper is the same as the cumulative F.K.I. average, whereas the current F.K.I. averages for basis weight, bursting strength, machine direction and cross-machine direction Elmendorf tear are lower than the respective cumulative F.K.I. averages.

In order to compare the variation within a given mill, the test results for the participating mills have been tabulated in Tables III to XXI alphabetically. In addition to the current and cumulative average, a mill factor and mill index are given for each mill. The current mill average represents the average test result obtained for all samples evaluated from a given mill during the current period. The cumulative mill average for each test, on the other hand, represents the average of the current mill averages for the previous twelve months excluding the current period. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index (\%)}$$

The mill factor and the mill index are a convenient means for comparing the current mill results either with the previous results for

that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that information is included about the sheet finish. A review of the tables for the mills which supplied this information indicates that some kind of water finish is being used by all.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961

TABLE III

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189622	W.F.	5/ 1/61	4/ 6/61	1	44.0	40.8	42.7	13.6	12.1	12.7	131	90	109	320	240	283	352	304	323[a]
189739	W.F.	5/ 8/61	4/14/61	1	44.0	42.0	42.9	13.1	11.9	12.6	131	92	108	296	232	264[a]	456	296	327[a]
189806	W.F.	5/15/61	4/18/61	1	44.2	42.2	43.3	13.1	12.0	12.7	127	85	107	336	232	276	400	256	333[a]
189898	W.F.	5/19/61	4/21/61	1	43.8	42.4	43.3	13.8	12.2	12.8	129	83	108	312	240	278	408	320	357[a]
Current Mill Average:							43.0			12.7			108			275			335
Cumulative Mill Average:							43.8			12.4			108			285			345
Mill Factor, %							98.2			102.4			100.0			96.5			97.1
Mill Index, %							98.9			100.8			97.3			82.8			89.6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE IV

MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189623	WF1S	5/ 1/61	4/20/61	2	44.0	42.6	43.2	14.2	13.2	13.8	119	76	100	384	296	329	392	304	346[a]
189800	WF1S	5/15/61	4/25/61	2	44.0	42.2	43.5	13.8	13.2	13.4	122	81	102	368	272	311	384	304	347[a]
189801	WF1S	5/15/61	4/25/61	2	44.2	42.0	43.0	14.0	13.0	13.5	119	83	101	392	288	327[a]	392	304	341[a]
189802	WF1S	5/15/61	4/30/61	2	43.6	42.0	42.5	14.2	12.9	13.2	129	93	109	384	272	325[a]	432	336	378[a]
189816	WF1S	5/16/61	5/ 3/61	2	43.2	41.0	42.3	13.8	12.8	13.2	125	69	105	392	272	336[a]	400	328	359[a]
189894	WF1S	5/19/61	5/ 5/61	2	44.0	42.6	43.2	14.0	13.1	13.7	123	69	95	376	296	332[a]	456	320	379[a]
189895	WF1S	5/19/61	5/ 6/61	2	44.0	42.8	43.5	13.8	12.9	13.4	126	83	103	352	248	313	432	344	389[a]
189921	WF1S	5/23/61	5/11/61	2	44.2	42.6	43.6	13.3	12.8	13.0	126	96	112	384	272	326[a]	408	312	361[a]
Current Mill Average:							43.1			13.4			103			325			362
Cumulative Mill Average:							43.5			13.0			111			321			365
Mill Factor, %							99.1			103.1			92.8			101.2			99.2
Mill Index, %							99.1			106.3			92.8			97.9			96.8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE V

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189733	W.F.	5/ 5/61	4/14/61	-	44.2	41.8	43.0	12.8	11.1	12.0	130	101	116	432	304	351[a]	440	328	370[a]
189734	W.F.	5/ 5/61	4/14/61	-	43.8	41.8	43.0	13.0	11.8	12.1	132	100	115	376	296	338[a]	432	336	376[a]
189930	W.F.	5/24/61	5/ 8/61	-	43.2	41.4	42.3	12.9	11.7	12.2	122	99	110	376	312	346[a]	400	320	364[a]
189931	W.F.	5/24/61	5/ 8/61	-	43.8	42.2	42.8	12.9	11.7	12.2	123	91	110	400	328	357[a]	400	336	373[a]
Current Mill Average:							42.8			12.1			113			348			371
Cumulative Mill Average:							43.6			12.5			112			351			361
Mill Factor, %							98.2			96.8			100.9			99.1			102.8
Mill Index, %							98.4			96.0			101.8			104.8			99.2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE VI

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189617	W.F.	5/ 1/61	4/20/61	3	46.0	44.0	44.3	12.0	11.3	11.6	138	100	111	392	372	341[a]	416	336	375[a]
189624	W.F.	5/ 1/61	4/23/61	3	44.2	42.4	43.7	11.9	11.3	11.6	134	85	109	368	280	331[a]	432	336	377[a]
Current Mill Average:							44.0			11.6			110			336			376
Cumulative Mill Average:							43.9			11.9			111			339			379
Mill Factor, %							100.2			97.5			99.1			99.1			99.2
Mill Index, %							101.1			92.1			99.1			101.2			100.5

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE VII

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189729	W.B.	5/ 5/61	4/20/61	-	43.8	41.8	42.6	13.0	11.2	12.4	125	87	104	400	328	361[a]	432	360	403[a]
189730	W.B.	5/ 5/61	4/26/61	-	44.0	42.2	43.0	12.7	11.7	12.3	126	70	102	432	320	377[a]	448	384	411[a]
189899	W.B.	5/19/61	5/ 5/61	-	42.4	41.6	42.0	12.3	11.3	11.9	126	91	107	392	272	343[a]	424	360	389[a]
189900	W.B.	5/19/61	5/ 6/61	-	43.8	42.0	42.5	13.0	11.9	12.3	122	88	106	408	320	365[a]	424	368	401[a]
189904	W.B.	5/22/61	5/20/61	-	43.4	40.4	42.4	12.7	11.9	12.2	124	77	104	384	304	345[a]	408	320	379[a]
Current Mill Average:							42.5			12.2			105			358			396
Cumulative Mill Average:							43.5			12.0			111			364			409
Mill Factor, %							97.7			101.7			94.6			98.4			96.8
Mill Index, %							97.7			96.8			94.6			107.8			105.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE VIII

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189620	WF1S	5/ 1/61	4/26/61	?	43.6	42.0	42.9	14.5	13.3	13.9	139	86	116	360	272	313[a]	400	336	367[a]
189621	WF1S	5/ 1/61	4/27/61	2	44.0	42.0	43.0	14.4	13.2	13.8	128	93	115	416	272	335[a]	400	336	362[a]
189803	WF1S	5/15/61	5/ 1/61	2	43.0	41.0	42.1	13.9	12.8	13.3	125	81	109	352	280	319	368	320	341[a]
189804	WF1S	5/15/61	5/ 2/61	2	42.4	40.4	41.6	13.2	12.5	12.9	126	80	104	400	264	332[a]	368	304	333[a]
189845	WF1S	5/17/61	5/11/61	2	42.6	41.0	42.1	13.6	12.2	13.1	129	86	104	416	288	350	368	304	335[a]
189846	WF1S	5/17/61	5/12/61	2	42.6	40.6	41.9	14.6	13.0	13.8	134	88	109	360	272	306[a]	424	328	373[a]
189932	WF1S	5/25/61	5/15/61	2	44.2	42.0	42.6	14.1	13.1	13.5	137	85	111	360	264	306[a]	384	296	339[a]
189933	WF1S	5/25/61	5/16/61	2	43.6	41.0	42.5	14.1	12.7	13.4	125	79	105	384	264	309	384	312	356[a]
Current Mill Average:							42.3			13.5			109			321			351
Cumulative Mill Average:							43.1			13.8			110			326			360
Mill Factor, %							98.1			97.8			99.1			98.5			97.5
Mill Index, %							97.2			107.1			98.2			96.7			93.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE IX

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
No samples submitted.																			

TABLE X

MILL H -- 42-LB. LINERBOARD

189728	S.F.	5/ 5/61	4/29/61	7	42.8	40.2	41.6	12.9	11.9	12.4	131	86	106	384	264	332	432	344	377[a]
189763	S.F.	5/12/61	5/ 3/61	7	43.4	40.4	42.0	13.0	12.2	12.6	129	87	106	408	280	330[a]	416	344	391[a]
189915	S.F.	5/22/61	5/15/61	7	43.8	40.6	42.5	13.4	11.7	12.9	125	90	106	408	296	347[a]	424	360	387[a]
Current Mill Average:							42.0			12.6			106			336			385
Cumulative Mill Average:							43.2			12.5			105			341			380
Mill Factor, %							97.2			100.8			101.0			98.5			101.3
Mill Index, %							96.6			100.0			95.5			101.2			102.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XI

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189667	WF1S	5/ 2/61	4/25/61	1	43.2	41.2	42.1	13.0	11.9	12.4	122	104	112	424	312	362[a]	488	360	395[a]
189726	WF1S	5/ 5/61	4/27/61	1	42.4	41.0	41.8	12.8	11.6	12.2	120	96	109	368	264	332[a]	480	368	411[a]
189747	WF1S	5/ 9/61	5/ 1/61	1	43.2	41.8	42.4	13.9	11.8	12.7	126	92	108	384	240	322[a]	432	272	365[a]
189761	WF1S	5/11/61	5/ 4/61	1	43.8	42.0	43.2	13.7	12.1	12.8	123	83	109	408	288	340[a]	432	336	382[a]
189799	WF1S	5/15/61	5/ 9/61	1	43.8	42.2	42.9	13.5	12.3	13.0	126	95	111	368	264	317[a]	440	272	389[a]
189893	WF1S	5/19/61	5/11/61	1	44.0	42.6	43.6	13.5	11.9	12.9	127	84	106	384	264	322	408	344	371[a]
189910	WF1S	5/22/61	5/15/61	1	43.0	42.0	42.3	12.7	11.2	12.1	126	77	108	352	264	315	440	344	392[a]
189920	WF1S	5/23/61	5/17/61	1	42.8	42.0	42.3	13.5	12.0	12.9	140	90	112	360	240	305[a]	432	352	392[a]
Current Mill Average:							42.6			12.6			109			327			387
Cumulative Mill Average:							43.4			12.9			111			323			396
Mill Factor, %							98.2			97.7			98.2			101.2			97.7
Mill Index, %							97.9			100.0			98.2			98.5			103.5

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XII

MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189618	WFlS	5/ 1/61	3/30/61	1	44.0	42.2	43.2	14.0	13.0	13.4	129	83	108	336	296	318	408	312	363[a]
189619	WFlS	5/ 1/61	3/30/61	1	44.0	42.4	43.2	14.2	13.0	13.3	136	81	107	368	272	327[a]	400	328	362[a]
189727	WFlS	5/ 5/61	4/13/61	1	43.6	42.0	42.9	14.1	12.3	13.2	128	84	108	376	272	313	416	328	382[a]
189746	WFlS	5/ 9/61	4/14/61	1	43.8	42.0	42.9	13.9	12.8	13.1	127	88	108	376	304	326[a]	432	328	364[a]
189762	WFlS	5/12/61	4/15/61	1	43.6	42.0	42.6	13.9	12.7	13.2	135	92	108	368	280	329[a]	416	336	365[a]
189805	WFlS	5/15/61	4/16/61	1	43.8	42.2	42.9	14.0	12.9	13.2	125	93	105	384	272	334[a]	416	328	377[a]
189866	WFlS	5/18/61	4/22/61	1	43.4	42.0	42.6	14.2	12.6	13.2	126	87	106	352	288	315	448	320	366[a]
189901	WFlS	5/19/61	4/24/61	1	44.0	42.6	43.3	14.0	11.4	13.0	123	79	108	360	248	314	432	296	386[a]
189934	WFlS	5/25/61	4/27/61	1	43.6	42.2	42.8	13.9	12.1	13.1	128	85	110	368	280	319[a]	384	320	348[a]
Current Mill Average:							42.9			13.2			107			322			368
Cumulative Mill Average:							43.3			13.0			112			340			376
Mill Factor, %							99.1			101.5			95.5			94.7			97.9
Mill Index, %							98.6			104.8			96.4			97.0			98.4

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XIII

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189625	----	5/ 1/61	4/ 4/61	1	43.6	42.6	43.1	13.3	11.9	12.5	138	80	110	392	312	338[a]	432	352	394[a]
189626	----	5/ 1/61	4/ 5/61	1	45.0	42.6	44.0	13.9	12.5	13.2	140	81	112	360	304	333[a]	400	328	379[a]
189627	----	5/ 1/61	4/ 6/61	1	45.8	42.0	43.9	13.8	12.0	13.0	141	88	114	400	272	323[a]	464	344	395[a]
189628	----	5/ 1/61	4/ 6/61	1	44.0	41.8	43.4	13.0	11.7	12.4	128	95	114	360	272	315	424	328	385[a]
189629	----	5/ 1/61	4/ 7/61	1	44.8	42.4	43.9	13.2	12.0	12.8	141	95	114	424	296	337[a]	432	352	391[a]
189735	----	5/ 8/61	4/ 9/61	1	44.2	41.8	43.3	13.5	12.3	12.9	140	90	114	352	256	301[a]	400	328	358[a]
189736	----	5/ 8/61	4/ 9/61	1	45.6	40.8	42.3	13.1	12.0	12.5	131	86	112	368	248	296	392	328	361[a]
189737	----	5/ 8/61	4/11/61	1	44.2	43.4	43.8	13.9	12.5	13.3	132	94	113	456	272	339	392	344	374[a]
189738	----	5/ 8/61	4/11/61	1	44.2	42.4	43.6	13.2	11.9	12.7	135	87	113	408	240	317[a]	368	312	344[a]
Current Mill Average:							43.5			12.8			113			322			376
Cumulative Mill Average:							43.5			13.0			111			325			372
Mill Factor, %							100.0			98.5			101.8			99.1			101.1
Mill Index, %							100.0			101.6			101.8			97.0			100.5

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189758	W.F.	5/10/61	5/ 3/61	-	44.0	43.0	43.6	13.0	12.2	12.7	143	97	121	344	280	308	368	320	344[a]
189759	W.F.	5/10/61	5/ 4/61	-	44.0	42.6	43.4	13.2	12.1	12.6	142	102	125	360	280	321[a]	384	328	360[a]
189760	W.F.	5/10/61	5/ 5/61	-	43.6	42.0	43.2	13.0	12.2	12.6	136	96	118	376	280	335[a]	408	336	372[a]
189788	W.F.	5/15/61	5/10/61	-	42.6	41.8	42.1	13.0	12.4	12.7	127	87	108	368	272	321[a]	352	288	327[a]
189789	W.F.	5/15/61	5/11/61	-	44.4	43.2	43.9	13.3	12.3	13.0	137	90	115	360	296	329	384	336	362[a]
189790	W.F.	5/15/61	5/12/61	-	44.2	43.2	43.8	12.9	11.9	12.4	145	91	120	376	320	341[a]	400	320	368[a]
189907	W.F.	5/22/61	5/18/61	-	43.8	42.2	43.1	13.1	12.3	12.8	131	86	115	392	264	310[a]	384	312	355[a]
189908	W.F.	5/22/61	5/19/61	-	42.4	41.8	42.2	13.0	11.7	12.2	128	86	114	360	264	298[a]	384	296	340[a]
Current Mill Average:							43.2			12.6			117			320			354
Cumulative Mill Average:							43.7			12.7			114			323			356
Mill Factor, %							98.9			99.2			102.6			99.1			99.4
Mill Index, %							99.3			100.0			105.4			96.4			94.7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XV

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189748	WF1S	5/ 9/61	5/ 1/61	2	43.2	41.6	42.3	13.3	12.1	12.6	127	82	107	432	240	373[a]	472	376	423[a]
189749	WF1S	5/ 9/61	5/ 3/61	2	44.2	42.2	42.9	13.8	12.2	12.9	120	70	99	464	296	378	480	384	427[a]
189814	WF1S	5/16/61	5/ 8/61	1	44.6	43.0	43.9	13.1	11.8	12.6	115	76	96	368	312	343[a]	432	336	387[a]
189815	----	5/16/61	5/10/61	1	43.8	42.0	42.9	13.1	12.0	12.7	120	92	105	400	336	361	416	336	372[a]
189909	WF1S	5/22/61	5/12/61	1	42.6	41.8	42.1	13.0	11.7	12.1	118	88	108	360	320	343[a]	440	336	392[a]
189922	WF1S	5/23/61	5/16/61	2	44.4	42.0	43.2	13.8	12.2	12.8	119	97	107	408	328	370	448	352	403[a]
189923	WF1S	5/23/61	5/18/61	2	43.2	41.8	42.5	13.0	11.8	12.3	116	81	103	432	336	378[a]	496	384	421[a]
Current Mill Average:							42.8			12.6			104			364			404
Cumulative Mill Average:							43.6			12.7			106			361			401
Mill Factor, %							98.2			99.2			98.1			100.8			100.7
Mill Index, %							98.4			100.0			93.7			109.6			108.0

TABLE XVI

MILL N -- 42-LB. LINERBOARD

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XVII

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189791	W.F.	5/15/61	4/ 6/61	2	43.8	41.8	42.8	13.2	12.0	12.7	121	93	109	408	272	319	392	304	349[a]
189792	W.F.	5/15/61	4/ 6/61	2	43.8	42.0	43.1	13.0	12.1	12.6	130	89	109	344	280	305[a]	408	344	365[a]
189793	W.F.	5/15/61	4/ 7/61	2	43.8	41.6	42.4	12.5	11.7	12.0	121	82	104	352	272	303	432	344	372[a]
189794	W.F.	5/15/61	4/26/61	2	43.0	41.4	42.2	12.5	11.6	12.0	125	84	106	328	256	297[a]	376	328	347[a]
189795	W.F.	5/15/61	4/28/61	2	43.8	42.0	42.9	13.2	12.3	12.8	123	86	109	400	312	358[a]	400	352	375[a]
189796	W.F.	5/15/61	4/28/61	2	43.6	41.8	42.4	12.3	11.9	12.1	124	96	108	408	288	326[a]	392	336	361[a]
189797	W.F.	5/15/61	5/ 2/61	2	43.6	41.0	42.2	13.2	12.1	12.5	129	90	109	480	296	351[a]	416	352	380[a]
189798	W.F.	5/15/61	5/ 4/61	2	43.4	40.4	42.2	13.2	12.0	12.7	133	88	107	336	280	311[a]	472	320	373[a]
Current Mill Average:							42.5			12.4			108			321			365
Cumulative Mill Average:							43.7			12.5			113			322			377
Mill Factor, %							97.3			99.2			95.6			99.7			96.8
Mill Index, %							97.7			98.4			97.3			96.7			97.6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189847	W.F.	5/17/61	4/10/61	-	44.4	42.6	43.6	13.1	12.4	12.8	118	94	106	440	328	381[a]	456	336	403[a]
189848	W.F.	5/17/61	4/15/61	-	44.2	42.2	43.1	12.7	11.2	12.1	129	82	110	432	344	381[a]	448	376	413[a]
189849	W.F.	5/17/61	4/30/61	-	44.2	42.8	43.7	13.5	12.1	12.9	130	83	105	416	312	368	464	352	413[a]
189850	W.F.	5/17/61	4/28/61	-	44.0	42.8	43.5	13.2	12.0	12.8	134	79	105	408	344	372[a]	464	376	417[a]
Current Mill Average:							43.5			12.6			107			375			412
Cumulative Mill Average:							43.7			12.7			109			366			403
Mill Factor, %							99.5			99.2			98.2			102.5			102.2
Mill Index, %							100.0			100.0			96.4			113.0			110.2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XIX

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189740	W.F.	5/ 8/61	2/23/61	1	42.8	41.8	42.3	12.9	11.9	12.3	130	94	116	344	264	307[a]	368	320	341[a]
189741	W.F.	5/ 8/61	2/28/61	1	42.6	42.0	42.2	12.7	11.9	12.2	130	91	114	312	248	288[a]	352	312	331[a]
189742	W.F.	5/ 8/61	3/ 6/61	1	43.8	41.8	42.6	13.9	11.8	12.6	125	87	108	320	248	282[a]	368	240	317[a]
189743	W.F.	5/ 8/61	3/10/61	1	42.8	42.0	42.3	12.8	11.8	12.3	146	90	114	352	264	301[a]	360	280	325[a]
189744	W.F.	5/ 8/61	3/14/61	1	43.0	42.0	42.3	12.6	11.7	12.2	132	92	115	320	248	291[a]	376	312	341[a]
189745	W.F.	5/ 8/61	3/18/61	1	42.8	41.6	42.2	12.8	11.9	12.1	134	90	114	328	240	289[a]	368	296	336[a]
189911	W.F.	5/22/61	3/20/61	1	42.2	41.4	41.9	13.6	11.8	12.7	140	81	114	320	256	289[a]	368	312	329[a]
189912	W.F.	5/22/61	3/23/61	1	42.4	41.0	41.9	12.7	11.6	12.1	145	97	113	328	264	292[a]	360	296	329[a]
189913	W.F.	5/22/61	3/26/61	1	42.2	41.8	42.0	12.8	11.9	12.2	134	74	110	328	248	292[a]	336	272	310[a]
189914	W.F.	5/22/61	3/30/61	1	42.6	41.6	42.1	12.8	11.9	12.2	137	96	111	336	248	293[a]	368	296	335[a]
189924	----	5/23/61	4/ 3/61	1	43.0	41.2	42.1	13.7	12.8	13.1	132	83	108	320	216	265[a]	376	296	325[a]
189925	----	5/23/61	4/ 6/61	1	42.4	40.2	41.9	12.9	12.1	12.5	139	85	114	320	248	289	376	312	344[a]
Current Mill Average:							42.1			12.4			113			290			330
Cumulative Mill Average:							43.0			12.8			112			286			339
Mill Factor, %							97.9			96.9			100.9			101.4			97.3
Mill Index, %							96.8			98.4			101.8			87.3			88.2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XX

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189750	W.F.	5/ 9/61	4/16/61	1	44.2	42.2	43.6	12.8	11.8	12.1	125	80	106	352	224	289	408	336	367[a]
189751	W.F.	5/ 9/61	4/18/61	1	45.0	43.0	44.1	13.1	12.1	12.6	131	94	111	352	256	309	432	312	377[a]
189752	W.F.	5/ 9/61	4/19/61	1	45.6	43.0	44.0	13.0	12.0	12.4	129	91	112	344	264	310	400	336	363[a]
189753	W.F.	5/ 9/61	4/21/61	1	43.6	42.2	42.7	12.9	11.8	12.2	127	91	111	328	272	305[a]	376	328	355[a]
189916	W.F.	5/22/61	5/ 2/61	1	44.0	41.8	42.5	13.2	12.0	12.5	122	79	105	328	232	287[a]	384	320	352[a]
189917	W.F.	5/22/61	5/ 3/61	1	44.0	41.8	43.0	13.2	12.1	12.5	122	83	105	336	232	292[a]	392	328	353[a]
189918	W.F.	5/22/61	5/ 5/61	1	44.4	42.0	43.1	13.5	11.9	12.6	130	81	109	368	264	299	416	328	363[a]
189919	W.F.	5/22/61	5/ 8/61	1	44.0	42.2	42.7	13.3	12.1	12.7	123	96	110	328	256	291[a]	384	328	353[a]
Current Mill Average:							43.2			12.5			109			298			360
Cumulative Mill Average:							43.5			12.6			109			320			365
Mill Factor, %							99.3			99.2			100.0			93.1			98.6
Mill Index, %							99.3			99.2			98.2			89.8			96.3

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXI

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189731	W.F.	5/ 5/61	4/27/61	1	43.8	42.0	42.7	12.1	11.6	11.8	130	102	118	376	256	321[a]	400	328	349[a]
189732	W.F.	5/ 5/61	4/27/61	1	43.8	42.0	42.9	12.1	11.3	11.7	136	109	121	400	272	324[a]	400	328	347[a]
189896	W.F.	5/19/61	5/ 7/61	1	43.8	43.0	43.4	12.4	11.8	12.1	134	97	117	352	288	311	424	336	370[a]
189897	W.F.	5/19/61	5/ 8/61	1	43.8	42.4	43.1	13.0	12.2	12.5	125	86	109	360	280	313	384	320	353[a]
189902	W.F.	5/22/61	5/10/61	1	44.0	42.0	43.0	12.5	11.9	12.2	125	97	110	368	304	325[a]	400	328	365[a]
189903	W.F.	5/22/61	5/13/61	1	43.6	42.6	43.2	12.2	11.5	12.0	139	95	119	352	272	305[a]	368	320	346[a]
Current Mill Average:							43.1			12.0			116			317			355
Cumulative Mill Average:							43.5			12.0			117			323			367
Mill Factor, %							99.1			100.0			99.1			98.1			96.7
Mill Index, %							99.1			95.2			104.5			95.5			94.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

PART II: COMPARISON OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY WITH THOSE OBTAINED AT THE MILLS

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. Mill test conditions are shown in Table XXII, where it may be noted that the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the preconditioning and conditioning time periods varied considerably.

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of percentage differences between Institute and mill test results is given in Table XXIV for the current period and the two previous periods.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. In Table XXIII the over-all average difference between Institute and mill results is shown for each of these tests based on the current mill averages--i.e., based on the data for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the over-all average differences shown for each test in Table XXIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

TABLE XXII

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

Mill Code	Preconditioning			Conditioning		
	Relative Humidity, %	Temperature, °F.	Time, hr.	Relative Humidity, %	Temperature, °F.	Time, hr.
A	42-47	68-79	0.5	50	73	24-48
B	50	72	120	50	70-72	120-168
C		None		50	73	24
D		None		50	73	24
E		None		49-50	71-73	48
F	50	72	24		None	
G			No samples submitted.			
H	50	73	24		None	
I		None		55-58	72	--
J	50	70	24		None	
K	50	73	48	50	73	3-4
L	34-36	77-78	8	48-52	72-73	16
M		None		50	73	24
N			No samples submitted.			
O	50	73	24	50	73	24
P	51-53	72-73	48	50	73	--
Q		None		50-80	78-84	--
S	50	73	24	50	73	24
T		None		50	73	24

TABLE XXIII

SUMMARY OF TEST RESULT COMPARISONS (Average Mill and Institute Results)

Mills[a]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T
No. of Samples Compared	4	8	4	2	5	8	0	3	8	9	9	8	7	0	8	4	12	8	6
Basis Weight																			
Institute	43.0	43.1	42.8	44.0	42.5	42.3	--	42.0	42.6	42.9	43.5	43.2	42.8	--	42.5	43.5	42.1	43.2	43.1
Mill	43.2	42.8	43.2	44.4	42.2	42.4	--	42.4	42.9	42.9	43.5	43.0	42.9	--	42.5	42.9	41.9	43.5	43.2
Av. Diff.[b]	+0.2	-0.3	+0.4	+0.4	-0.3	+0.1	--	+0.4	+0.3	0.0	0.0	-0.2	+0.1	--	0.0	-0.6	-0.2	+0.3	+0.1
Max. Diff.[c]	+0.3	-1.0	+0.6	+0.6	-0.7	+0.7	--	+1.1	+0.9	±0.4	+0.3	-0.8	+0.6	--	±0.2	-0.7	-0.6	+0.8	+0.7
Caliper																			
Institute	12.7	13.4	12.1	11.6	12.2	13.5	--	12.6	12.6	13.2	12.8	12.6	12.6	--	12.4	12.6	12.4	12.5	12.0
Mill	12.1	12.8	12.3	11.2	11.9	13.3	--	12.4	12.6	13.0	12.5	12.4	12.0	--	12.1	12.1	12.0	12.4	11.9
Av. Diff.[b]	-0.6	-0.6	+0.2	-0.4	-0.3	-0.2	--	-0.2	0.0	-0.2	-0.3	-0.2	-0.6	--	-0.3	-0.5	-0.4	-0.1	-0.1
Max. Diff.[c]	-0.8	-1.1	+0.4	-0.4	-0.4	±0.9	--	-0.3	+0.6	-0.5	-0.7	-0.5	-0.8	--	-0.6	-0.7	-1.1	-0.2	-0.5
Bursting Strength																			
Institute	106	108	113	110	106	108	--	106	108	107	113	117	104	--	108	107	113	109	116
Mill	111	107	112	113	107	113	--	108	109	109	111	118	107	--	107	108	113	107	117
Av. Diff.[b]	+3	+2	-1	+1	+2	+3	--	+2	0	+2	-2	+1	+3	--	-1	+1	0	-2	+1
Max. Diff.[c]	+5	+7	-2	+4	+5	+10	--	+4	-6	+5	-6	+6	+9	--	±3	+3	±4	-3	+7
Tearing Strength, in																			
Institute	275	325	348	336	358	321	--	336	327	322	322	320	364	--	321	375	290	298	317
Mill	282	344	342	330	343	323	---	324	330	330	302	282	--	--	277	384	254	317	328
Av. Diff.[b]	+7	+19	-6	-6	-15	+2	--	-12	+3	+8	-20	-38	--	--	-44	+9	-36	+19	+11
Max. Diff.[c]	+11	+37	-23	-11	-32	+25	--	-30	+34	+38	-43	-60	--	--	-81	+33	-53	+30	+37
Tearing Strength, across																			
Institute	335	362	371	376	396	351	--	385	387	368	376	354	404	--	365	412	330	377	355
Mill	356	402	371	392	405	385	--	386	406	386	380	330	--	--	368	410	333	390	358
Av. Diff.[b]	+21	+40	0	+16	+9	+34	--	+1	+19	+18	+4	-24	--	--	+3	-2	+3	+30	+3
Max. Diff.[c]	+36	+80	-7	+18	+20	+70	--	+17	+40	+42	+29	-45	--	--	+24	+14	-29	+41	±26

[a] Comparison based on averages involved only those samples on which mill test data were submitted.

[b] Average difference is the difference between the Institute mill average and the mill average based on mill test data.

[c] Maximum difference encountered in comparing the Institute average and the mill averages for any sample submitted by that particular mill.

TABLE XXIV

COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS
Average Difference, Per Cent

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, across
A	Current	+0.5	-5	+3	+3	+6
	169th	+0.5	-2	+0.9	-0.4	+5
	168th	-0.2	-2	-0.9	+0.7	+4
B	Current	-0.7	-4	+2	+6	+11
	169th	-0.2	-2	-0.9	-2	+6
	168th	0	-2	-2	+2	+8
C	Current	+0.9	+2	-0.9	-2	0
	169th	+0.5	0	-4	-6	+0.3
	168th	+0.5	-0.8	-4	-5	+4
D	Current	+0.9	-3	+3	-2	+4
	169th	+1	-2	+3	-4	+2
	168th	-0.5	-3	-2	+3	+6
E	Current	-0.7	-2	+2	-4	+2
	169th	-0.9	-2	+4	-6	+1
	168th	-0.7	-3	0	-13	-6
F	Current	+0.2	-1	+6	+0.6	+10
	169th	+1	-2	+6	-0.9	+9
	168th	+2	-1	+2	-2	+12
G	Current	--	--	--	--	--
	169th	--	--	--	--	--
	168th	--	--	--	--	--
H	Current	+1	-2	+2	-4	+0.3
	169th	+0.2	-2	+6	-7	+0.3
	168th	+0.2	-2	+5	-7	-2
I	Current	+0.7	0	0	+0.9	+5
	169th	+0.5	-2	-3	+0.9	+2
	168th	+0.2	-2	-2	-2	+3
J	Current	0	-2	+2	+2	+5
	169th	+0.7	-2	-5	-6	-0.3
	168th	--	--	--	--	--
K	Current	0	-2	-2	-6	+1
	169th	0	-2	+2	-11	-0.8
	168th	0	-3	+4	-9	+2
L	Current	-0.5	-2	+0.9	-12	-7
	169th	+0.9	-0.8	+3	-7	-3
	168th	-0.7	-0.8	-0.9	-14	-8
M	Current	+0.2	-5	+3	--	--
	169th	-0.2	-5	+5	--	--
	168th	-0.7	-5	+6	--	--
N	Current	--	--	--	--	--
	169th	--	--	--	--	--
	168th	--	--	--	--	--
O	Current	0	-2	-0.9	-14	+0.8
	169th	-0.7	-4	-5	-12	-6
	168th	-0.2	-2	-3	-12	-9
P	Current	-1	-4	+0.9	+2	-0.5
	169th	0	-3	0	+4	+0.3
	168th	-0.7	-4	-2	+0.8	+0.5
Q	Current	-0.5	-3	0	-12	+0.9
	169th	-1	-2	0	-12	+5
	168th	--	--	--	--	--
S	Current	+0.7	-0.8	-2	+6	+8
	169th	+0.5	0	+2	+6	+10
	168th	+1	-0.8	+3	+5	+12
T	Current	+0.2	-0.8	+0.9	+3	+0.8
	169th	+1	-2	+2	+22	+2
	168th	-0.2	-0.8	-5	+6	+2

It may be noted in Table XXIV that for the current period the largest average percentage difference between the average basis weight results of the Institute and those of a given mill on corresponding samples was one per cent. By comparison, the largest average percentage difference noted for the previous two periods was two per cent. Further, it may be noted that the average basis weight results for Mills A, C, D, F, H, I, M, S, and T were higher than those for the Institute, whereas the average basis weight results for Mills J, K, and O were the same as the corresponding results for the Institute, and the results for the other mills were lower. Agreement between Institute and mill basis weight results was very good.

The maximum variation in caliper for the current period was five per cent. This was the same as the maximum variation for the previous two periods. Compared with the Institute's results, the average test results for all mills were lower with the exception of the result for Mill C which was higher and the result for Mill I which was the same. Agreement was very good for the majority of comparisons of Institute and mill caliper results.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of six per cent for the current period. The maximum variation for the two preceding periods was also six per cent. The average bursting strength results for Mills A, B, D, E, F, H, J, L, M, P, and T were higher than those for the Institute, the average results for Mills I and Q were the same as those for the Institute, and the average results for the other mills were lower. Agreement between Institute and mill results was very good with the exception of the variation noted for Mill F.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills A, B, F, I, J, P, S, and T were higher than those for the Institute, and the average results for the other mills were lower. The maximum variation for the current period was fourteen per cent which was lower than the maximum variation of twenty-two per cent associated with the two preceding periods. Agreement between the Institute and mill results was generally good. However, the variations for Mills L, O, and Q appeared to be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills L and P were lower whereas the average result for Mill C was the same, and the average results for the other mills were higher than the corresponding results obtained at the Institute. The maximum variation for the current period was eleven per cent, which was slightly lower than the maximum variation of twelve per cent for the two preceding periods. As in the case of the machine direction results, agreement between Institute and mill results was generally good. Only the variations for Mills B and F appeared to be excessive.

The comparisons of Institute and mill data for individual sample lots are given alphabetically in Tables XXV to XLIII for the various mills. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

The reader's attention is directed to page 3 of this report where the comparison of Institute and mill test data is summarized to show the number of mills, and the percentage of all mills which this number represents, whose average test results for the month of May fall within designated percentages from the average test results obtained at the Institute.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189622	W.F.	4/ 6/61	1	42.7	42.5	-0.2	12.7	12.1	-0.6	109	114	+5	283	279	- 4	323[a]	359	+36
189739	W.F.	4/14/61	1	42.9	43.1	+0.2	12.6	12.1	-0.5	108	111	+3	264[a]	275	+11	327[a]	355	+28
189806	W.F.	4/18/61	1	43.3	43.4	+0.1	12.7	12.1	-0.6	107	109	+2	276	285	+ 9	333[a]	359	+26
189898	W.F.	4/21/61	1	43.3	43.6	+0.3	12.8	12.2	-0.6	108	111	+3	278	289	+11	357[a]	352	- 5
Current Mill Average:				43.0	43.2	+0.2	12.7	12.1	-0.6	108	111	+3	275	282	+ 7	335	356	+21

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

189623	WFIS	4/20/61	2	43.2	43.0	-0.2	13.8	13.0	-0.8	100	103	+3	329	345	+16	346[a]	368	+22
189800	WFIS	4/25/61	2	43.5	43.2	-0.3	13.4	12.8	-0.6	102	106	+4	311	341	+30	347[a]	389	+42
189801	WFIS	4/25/61	2	43.0	42.8	-0.2	13.5	13.1	-0.4	101	104	+3	327[a]	342	+15	341[a]	421	+80
189802	WFIS	4/30/61	2	42.5	42.1	-0.4	13.2	12.1	-1.1	109	107	-2	325[a]	331	+ 6	378[a]	382	+ 4
189816	WFIS	5/ 3/61	2	42.3	42.3	0.0	13.2	12.9	-0.3	105	108	+3	336[a]	335	- 1	359[a]	401	+42
189894	WFIS	5/ 5/61	2	43.2	43.2	0.0	13.7	13.2	-0.5	95	102	+7	332[a]	367	+35	379[a]	436	+57
189895	WFIS	5/ 6/61	2	43.5	42.5	-1.0	13.4	12.8	-0.6	103	103	0	313	350	+37	389[a]	418	+29
189921	WFIS	5/11/61	2	43.6	43.5	-0.1	13.0	12.6	-0.4	112	111	-1	326[a]	340	+14	361[a]	400	+39
Current Mill Average:				43.1	42.8	-0.3	13.4	12.8	-0.6	103	105	+2	325	344	+19	362	402	+40

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XVII

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189733	W.F.	4/14/61	-	43.0	43.4	+0.4	12.0	12.1	+0.1	116	115	-1	351[a]	328	-23	370[a]	371	+ 1
189734	W.F.	4/14/61	-	43.0	43.4	+0.4	12.1	12.1	0.0	115	116	+1	338[a]	329	- 9	376[a]	369	- 7
189930	W.F.	5/ 8/61	-	42.3	42.9	+0.6	12.2	12.4	+0.2	110	108	-2	346[a]	355	+ 9	364[a]	369	+ 5
189931	W.F.	5/ 8/61	-	42.8	42.9	+0.1	12.2	12.6	+0.4	110	108	-2	357[a]	355	- 2	373[a]	375	+ 2
Current Mill Average:				42.8	43.2	+0.4	12.1	12.3	+0.2	113	112	-1	34[a]	342	- 6	371	371	0

TABLE XVIII

MILL D -- 42-LB. LINERBOARD

189617	W.F.	4/20/61	3	44.3	44.4	+0.1	11.6	11.2	-0.4	111	112	+1	341[a]	330	-11	375[a]	393	+18
189624	W.F.	4/23/61	3	43.7	44.3	+0.6	11.6	11.2	-0.4	109	113	+4	331[a]	330	- 1	377[a]	392	+15
Current Mill Average:				44.0	44.4	+0.4	11.6	11.2	-0.4	110	113	+3	336	330	- 6	376	392	+16

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189729	W.B.	4/20/61	-	42.6	42.5	-0.1	12.4	12.0	-0.4	104	106	+2	361[a]	348	-13	403[a]	409	+ 6
189730	W.B.	4/26/61	-	43.0	43.1	+0.1	12.3	12.0	-0.3	102	108	+6	377[a]	367	-10	411[a]	431	+20
189899	W.B.	5/ 5/61	-	42.0	41.3	-0.7	11.9	11.6	-0.3	107	110	+3	343[a]	337	- 6	389[a]	397	+ 8
189900	W.B.	5/ 6/61	-	42.5	42.1	-0.4	12.3	12.0	-0.3	106	107	+1	365[a]	352	-13	401[a]	399	- 2
189904	W.B.	5/20/61	-	42.4	41.8	-0.6	12.2	11.9	-0.3	104	104	0	345[a]	313	-32	379[a]	389	+10
Current Mill Average:				42.5	42.2	-0.3	12.2	11.9	-0.3	105	107	+2	358	343	-15	396	405	+ 9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXX

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189620	WFIS	4/26/61	2	42.9	42.7	-0.2	13.9	13.0	-0.9	116	120	+ 4	313[a]	317	+ 4	367[a]	378	+11
189621	WFIS	4/27/61	2	43.0	43.7	+0.7	13.8	13.7	-0.1	115	118	+ 3	335[a]	360	+25	362[a]	408	+46
189803	WFIS	5/ 1/61	2	42.1	41.6	-0.5	13.3	12.8	-0.5	109	115	+ 6	319	305	-14	341[a]	411	+70
189804	WFIS	5/ 2/61	2	41.6	42.2	+0.6	12.9	13.8	+0.9	104	114	+10	332[a]	330	- 2	333[a]	364	+31
189845	WFIS	5/11/61	2	42.1	42.1	0.0	13.1	12.8	-0.3	104	110	+ 6	350	330	-20	335[a]	364	+29
189846	WFIS	5/12/61	2	41.9	41.3	-0.6	13.8	13.4	-0.4	109	117	+ 8	306[a]	303	- 3	373[a]	377	+ 4
189932	WFIS	5/15/61	2	42.6	43.2	+0.6	13.5	13.6	+0.1	111	116	+ 5	306[a]	312	+ 6	339[a]	386	+47
189933	WFIS	5/16/61	2	42.5	42.2	-0.3	13.4	13.4	0.0	105	110	+ 5	309	328	+19	356[a]	390	+34
Current Mill Average:				42.3	42.4	+0.1	13.5	13.3	-0.2	109	115	+ 6	321	323	+ 2	351	385	+34

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.

No samples submitted

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

189728	S.F.	4/29/61	7	41.6	41.6	0.0	12.4	12.1	-0.3	106	110	+4	332	302	-30	377[a]	376	- 1
189763	S.F.	5/ 3/61	7	42.0	42.1	+0.1	12.6	12.4	-0.2	106	108	+2	330[a]	328	- 2	391[a]	379	-12
189915	S.F.	5/15/61	7	42.5	43.6	+1.1	12.9	12.8	-0.1	106	106	0	347[a]	342	- 5	387[a]	404	+17
Current Mill Average:				42.0	42.4	+0.4	12.6	12.4	-0.2	106	108	+2	336	324	-12	385	386	+ 1

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189667	WFIS	4/25/61	1	42.1	42.5	+0.4	12.4	12.4	0.0	112	110	-2	362[a]	333	-29	395[a]	395	0
189726	WFIS	4/27/61	1	41.8	42.4	+0.6	12.2	12.4	+0.2	109	106	-3	332[a]	343	+11	411[a]	411	0
189747	WFIS	5/ 1/61	1	42.4	43.3	+0.9	12.7	12.6	-0.1	108	111	+3	322[a]	325	+ 3	365[a]	401	+36
189761	WFIS	5/ 4/61	1	43.2	43.0	-0.2	12.8	12.5	-0.3	109	111	+2	340[a]	325	-15	382[a]	404	+22
189799	WFIS	5/ 9/61	1	42.9	42.8	-0.1	13.0	12.5	-0.5	111	109	-2	317[a]	310	- 7	389[a]	392	+ 3
189893	WFIS	5/11/61	1	43.6	43.4	-0.2	12.9	12.5	-0.4	106	110	+4	322	330	+ 8	371[a]	411	+40
189910	WFIS	5/15/61	1	42.3	42.9	+0.6	12.1	12.7	+0.6	108	106	-2	315	339	+24	392[a]	417	+25
189920	WFIS	5/17/61	1	42.3	42.8	+0.5	12.9	12.7	-0.2	112	106	-6	305[a]	339	+34	392[a]	415	+23
Current Mill Average:				42.6	42.9	+0.3	12.6	12.6	0.0	109	109	0	327	330	+ 3	387	406	+19

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189618	WFIS	3/30/61	1	43.2	43.1	-0.1	13.4	12.9	-0.5	108	109	+1	318	299	-19	363[a]	378	+15
189619	WFIS	3/30/61	1	43.2	42.8	-0.4	13.3	12.8	-0.5	107	107	0	327[a]	297	-30	362[a]	367	+ 5
189727	WFIS	4/13/61	1	42.9	43.0	+0.1	13.2	13.2	0.0	108	109	+1	313	351	+38	382[a]	391	+ 9
189746	WFIS	4/14/61	1	42.9	42.8	-0.1	13.1	13.1	0.0	108	109	+1	326[a]	343	+17	364[a]	386	+22
189762	WFIS	4/15/61	1	42.6	42.9	+0.3	13.2	13.1	-0.1	108	111	+3	329[a]	339	+10	365[a]	396	+31
189805	WFIS	4/16/61	1	42.9	42.9	0.0	13.2	13.2	0.0	105	110	+5	334[a]	346	+12	377[a]	388	+11
189866	WFIS	4/22/61	1	42.6	43.0	+0.4	13.2	12.9	-0.3	106	109	+3	315	344	+29	366[a]	408	+42
189901	WFIS	4/24/61	1	43.3	43.1	-0.2	13.0	12.9	-0.1	108	108	0	314	341	+27	386[a]	396	+10
189934	WFIS	4/27/61	1	42.8	42.6	-0.2	13.1	12.9	-0.2	110	108	-2	319[a]	311	- 8	348[a]	360	+12
Current Mill Average:				42.9	42.9	0.0	13.2	13.0	-0.2	107	109	+2	322	330	+ 8	368	386	+18

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189625	----	4/ 4/61	1	43.1	42.9	-0.2	12.5	12.2	-0.3	110	109	-1	338[a]	295	-43	394[a]	367	-27
189626	----	4/ 5/61	1	44.0	44.3	+0.3	13.2	12.6	-0.6	112	106	-6	333[a]	308	-25	379[a]	365	-14
189627	----	4/ 6/61	1	43.9	44.1	+0.2	13.0	12.6	-0.4	114	114	0	323[a]	296	-27	395[a]	393	- 2
189628	----	4/ 6/61	1	43.4	43.5	+0.1	12.4	12.1	-0.3	114	111	-3	315	302	-13	385[a]	381	- 4
189629	----	4/ 7/61	1	43.9	43.8	-0.1	12.8	12.1	-0.7	114	112	-2	337[a]	305	-32	391[a]	405	+14
189735	----	4/ 9/61	1	43.3	43.4	+0.1	12.9	12.9	0.0	114	112	-2	301[a]	313	+12	358[a]	381	+23
189736	----	4/ 9/61	1	42.3	42.2	-0.1	12.5	12.4	-0.1	112	112	0	296	294	- 2	361[a]	390	+29
189737	----	4/11/61	1	43.8	43.8	0.0	13.3	13.1	-0.2	113	114	+1	339	310	-29	374[a]	380	+ 6
189738	----	4/11/61	1	43.6	43.6	0.0	12.7	12.7	0.0	113	112	-1	317[a]	300	-17	344[a]	360	+16
Current Mill Average:				43.5	43.5	0.0	12.8	12.5	-0.3	113	111	-2	322	302	-20	376	380	+ 4

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet In			Elmendorf Tear, g./sheet Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189758	W.F.	5/ 3/61	-	43.6	42.8	-0.8	12.7	12.5	-0.2	121	120	-1	308	279	-29	344[a]	317	-27
189759	W.F.	5/ 4/61	-	43.4	43.0	-0.4	12.6	12.1	-0.5	125	125	0	321[a]	297	-24	360[a]	328	-32
189760	W.F.	5/ 5/61	-	43.2	42.7	-0.5	12.6	12.1	-0.5	118	120	+2	335[a]	275	-60	372[a]	327	-45
189788	W.F.	5/10/61	-	42.1	42.5	+0.4	12.7	12.6	-0.1	108	106	-2	321[a]	279	-42	327[a]	333	+ 6
189789	W.F.	5/11/61	-	43.9	43.8	-0.1	13.0	12.9	-0.1	115	121	+6	329[a]	276	-53	362[a]	363	+ 1
189790	W.F.	5/12/61	-	43.8	43.6	-0.2	12.4	12.5	+0.1	120	120	0	341[a]	303	-38	368[a]	333	-35
189907	W.F.	5/18/61	-	43.1	43.2	+0.1	12.8	12.4	-0.4	115	118	+3	310[a]	272	-38	355[a]	329	-26
189908	W.F.	5/19/61	-	42.2	42.4	+0.2	12.2	12.0	-0.2	114	116	+2	298[a]	277	-21	340[a]	307	-33
Current Mill Average:				43.2	43.0	-0.2	12.6	12.4	-0.2	117	118	+1	320	282	-38	354	330	-24

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXVII

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189748	WFIS	5/ 1/61	2	42.3	42.9	+0.6	12.6	12.2	-0.4	107	108	+1	373[a]	---		423[a]	---	
189749	WFIS	5/ 3/61	2	42.9	42.8	-0.1	12.9	12.1	-0.8	99	108	+9	378	---		427[a]	---	
189814	WFIS	5/ 8/61	1	43.9	43.8	-0.1	12.6	11.9	-0.7	96	102	+6	343[a]	---		387[a]	---	
189815	----	5/10/61	1	42.9	43.0	+0.1	12.7	12.0	-0.7	105	108	+3	361	---		372[a]	---	
189909	WFIS	5/12/61	1	42.1	42.2	+0.1	12.1	11.7	-0.4	108	109	+1	343[a]	---		392[a]	---	
189922	WFIS	5/16/61	2	43.2	42.8	-0.4	12.8	12.3	-0.5	107	109	+2	370	---		403[a]	---	
189923	WFIS	5/18/61	2	42.5	42.6	+0.1	12.3	11.8	-0.5	103	107	+4	378[a]	---		421[a]	---	
Current Mill Average:				42.8	42.9	+0.1	12.6	12.0	-0.6	104	107	+3	364			404		

TABLE XXXVIII

MILL N -- 42-LB. LINERBOARD

No samples submitted

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XXXIX

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189791	W.F.	4/ 6/61	2	42.8	43.0	+0.2	12.7	12.2	-0.5	109	107	-2	319	269	-50	349[a]	362	+13
189792	W.F.	4/ 6/61	2	43.1	42.9	-0.2	12.6	12.2	-0.4	109	106	-3	305[a]	268	-37	365[a]	361	- 4
189793	W.F.	4/ 7/61	2	42.4	42.2	-0.2	12.0	11.7	-0.3	104	107	+3	303	283	-20	372[a]	356	-16
189794	W.F.	4/26/61	2	42.2	42.3	+0.1	12.0	11.9	-0.1	106	107	+1	297[a]	271	-26	347[a]	344	- 3
189795	W.F.	4/28/61	2	42.9	42.8	-0.1	12.8	12.2	-0.6	109	108	-1	358[a]	277	-81	375[a]	381	+ 6
189796	W.F.	4/28/61	2	42.4	42.2	-0.2	12.1	11.9	-0.2	108	106	-2	326[a]	277	-49	361[a]	356	- 5
189797	W.F.	5/ 2/61	2	42.2	42.2	0.0	12.5	12.2	-0.3	109	109	0	351[a]	280	-71	380[a]	387	+ 7
189798	W.F.	5/ 4/61	2	42.2	42.4	+0.2	12.7	12.3	-0.4	107	109	+2	311[a]	291	-20	373[a]	397	+24
Current Mill Average:				42.5	42.5	0.0	12.4	12.1	-0.3	108	107	-1	321	277	-44	365	368	+ 3

TABLE XL

MILL P -- 42-LB. LINERBOARD

189847	W.F.	4/10/61	-	43.6	42.9	-0.7	12.8	12.3	-0.5	106	107	+1	381[a]	404	+23	403[a]	417	+14
189848	W.F.	4/15/61	-	43.1	42.5	-0.6	12.1	11.5	-0.6	110	113	+3	381[a]	353	-28	413[a]	409	- 4
189849	W.F.	4/30/61	-	43.7	43.3	-0.4	12.9	12.3	-0.6	105	107	+2	368	401	+33	413[a]	401	-12
189850	W.F.	4/28/61	-	43.5	42.9	-0.6	12.8	12.1	-0.7	105	106	+1	372[a]	377	+ 5	417[a]	411	- 6
Current Mill Average:				43.5	42.9	-0.6	12.6	12.1	-0.5	107	108	+1	375	384	+ 9	412	410	- 2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XLI

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189740	W.F.	2/23/61	1	42.3	41.8	-0.5	12.3	12.1	-0.2	116	112	-4	307[a]	254	-53	341[a]	331	-10
189741	W.F.	2/28/61	1	42.2	42.0	-0.2	12.2	12.1	-0.1	114	112	-2	288[a]	253	-35	331[a]	340	+ 9
189742	W.F.	3/ 6/61	1	42.6	42.0	-0.6	12.6	12.0	-0.6	108	112	+4	282[a]	254	-28	317[a]	337	+20
189743	W.F.	3/10/61	1	42.3	41.9	-0.4	12.3	11.9	-0.4	114	113	-1	301[a]	256	-45	325[a]	338	+13
189744	W.F.	3/14/61	1	42.3	41.9	-0.4	12.2	12.0	-0.2	115	112	-3	291[a]	252	-39	341[a]	330	-11
189745	W.F.	3/18/61	1	42.2	41.9	-0.3	12.1	12.0	-0.1	114	112	-2	289[a]	260	-29	336[a]	338	+ 2
189911	W.F.	3/20/61	1	41.9	41.8	-0.1	12.7	12.0	-0.7	114	112	-2	289[a]	256	-33	329[a]	333	+ 4
189912	W.F.	3/23/61	1	41.9	42.0	+0.1	12.1	12.0	-0.1	113	112	-1	292[a]	260	-32	329[a]	335	+ 6
189913	W.F.	3/26/61	1	42.0	41.8	-0.2	12.2	12.0	-0.2	110	113	+3	292[a]	258	-34	310[a]	330	+20
189914	W.F.	3/30/61	1	42.1	42.0	-0.1	12.2	12.2	0.0	111	115	+4	293[a]	254	-39	335[a]	335	0
189924	----	4/ 3/61	1	42.1	41.8	-0.3	13.1	12.0	-1.1	108	112	+4	265[a]	254	-11	325[a]	332	+ 7
189925	----	4/ 6/61	1	41.9	41.9	0.0	12.5	12.0	-0.5	114	117	+3	289	238	-51	344[a]	315	-29
Current Mill Average:				42.1	41.9	-0.2	12.4	12.0	-0.4	113	113	0	290	254	-36	330	333	+ 3

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XLII

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189750	W.F.	4/16/61	1	43.6	43.5	-0.1	12.1	12.0	-0.1	106	107	+1	289	316	+27	367[a]	394	+27
189751	W.F.	4/18/61	1	44.1	43.8	-0.3	12.6	12.4	-0.2	111	108	-3	309	324	+15	377[a]	391	+14
189752	W.F.	4/19/61	1	44.0	43.9	-0.1	12.4	12.3	-0.1	112	110	-2	310[a]	320	+10	363[a]	404	+41
189753	W.F.	4/21/61	1	42.7	43.2	+0.5	12.2	12.2	0.0	111	108	-3	305[a]	314	+ 9	355[a]	392	+37
189916	W.F.	5/ 2/61	1	42.5	43.1	+0.6	12.5	12.4	-0.1	105	107	+2	287[a]	301	+14	352[a]	376	+24
189917	W.F.	5/ 3/61	1	43.0	43.7	+0.7	12.5	12.5	0.0	105	105	0	292[a]	316	+24	353[a]	382	+29
189918	W.F.	5/ 5/61	1	43.1	43.6	+0.5	12.6	12.7	+0.1	109	106	-3	299[a]	325	+26	363[a]	389	+26
189919	W.F.	5/ 8/61	1	42.7	43.5	+0.8	12.7	12.7	0.0	110	108	-2	291[a]	321	+30	353[a]	394	+41
Current Mill Average:				43.2	43.5	+0.3	12.5	12.4	-0.1	109	107	-2	298	317	+19	360	390	+30

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--MAY 1 THROUGH MAY 31, 1961 (continued)

TABLE XLIII

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
189731	W.F.	4/27/61	1	42.7	43.4	+0.7	11.8	11.8	0.0	118	117	-1	321[a]	320	- 1	349[a]	348	- 1
189732	W.F.	4/27/61	1	42.9	43.3	+0.4	11.7	11.8	+0.1	121	118	-3	324[a]	325	+ 1	347[a]	360	+13
189896	W.F.	5/ 7/61	1	43.4	43.0	-0.4	12.1	11.8	-0.3	117	119	+2	311	319	+ 8	370[a]	344	-26
189897	W.F.	5/ 8/61	1	43.1	42.9	-0.2	12.5	12.0	-0.5	109	113	+4	313	350	+37	353[a]	379	+26
189902	W.F.	5/10/61	1	43.0	43.1	+0.1	12.2	12.1	-0.1	110	117	+7	325[a]	348	+23	365[a]	374	+ 9
189903	W.F.	5/13/61	1	43.2	43.2	0.0	12.0	11.8	-0.2	119	117	-2	305[a]	309	+ 4	346[a]	345	- 1
Current Mill Average:				43.1	43.2	+0.1	12.0	11.9	-0.1	116	117	+1	317	328	+11	355	358	+ 3

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

THE INSTITUTE OF PAPER CHEMISTRY

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